3. INFRASTRUCTURE ELEMENT

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PURPOSE

The purpose of the Infrastructure Element (IE) is to identify and ensure provision of adequate potable water, sanitary sewer, solid waste and drainage resources, facilities and services to support the future population and development projected within the Future Land Use Element (FLUE) of the Town of Davie Comprehensive Plan (Comp Plan). The objective of the IE Data, Inventory, and Analysis (DIA) Report is to inventory and evaluate existing potable water, sanitary sewer, solid waste, natural groundwater aquifer recharge and drainage resources within the Town. In addition, the DIA Report determines the projected demands on these facilities and resources given future service demands and facility levels of service to adequately serve the projected demand. This information serves as the foundation for goals, objectives, and policies of the IE. Data and analysis for each of the four sub-elements contained within the Infrastructure Element DIA is provided in the following order:

A. Potable water;
B. Sanitary sewer;
C. Solid waste; and,
D. Drainage and natural aquifer recharge.

POTABLE WATER

This section evaluates the potable water system serving the Town of Davie. Potable water facilities are defined in Rule 9J-5.003, F.A.C. as "a system of structures designed to collect, treat, or distribute potable water, and includes water wells, treatment plants, reservoirs and distribution mains."

Geographic Service Area

Potable water is provided to Town residents via six separate utility providers: Town of Davie, City of Sunrise, Broward County, City of Hollywood, City of Fort Lauderdale and Ferncrest Utilities. The Town of Davie Utilities' service area includes the majority of eastern Davie and the Hard Rock Hotel complex on the Seminole Tribe of Florida Reservation. Ferncrest Utilities provides potable water to a small portion of the Town in the northeast sector of the Town, between Davie Road and SR 7. Broward County provides water to the Pine Island Ridge community, and a small portion at Griffin Road and Orange Drive east of SR7. Fort Lauderdale provides water along SR 84 in the area previously known as Hacienda Village east of SR 7. Hollywood provides water to an area north of Stirling Road west of Florida's Turnpike and a small area south of Stirling Road and north of Davie Road extension. Potable water is provided to the remainder of

the Town (predominantly the western portions of the Town) by the City of Sunrise Utilities.

Water Source

The Biscayne Aquifer is currently the City's source of potable water. The Town is planning to add a Reverse Osmosis facility to draw water from the Floridan Aquifer. This plan is further described under the "Alternative Water Supply Plan" section below.

Water Treatment Plant (WTP)

The Town of Davie's potable water system includes two water treatment facilities, the north water treatment plant (System I) and the south water treatment plant (System III). The permitted allocation is 2020 million gallons per year, or approximately 5.53 million gallons per day (MGD). The north water treatment plant has a rated capacity of 3.4 MGD, and is located near the intersection of Davie Road and S.W. 38 Court. The Town has two 0.3 million gallon finished water storage tanks, a 20,000 gallon hydropneumatic tank, a 17,000 gallon clearwell and a 52,000 gallon clearwell located at the north water treatment plant. Four wells located on the property supply the plant with surficial water from the Biscayne Aquifer. The water from the wells is treated via lime softening, filtration, and disinfection.

The south treatment plant has a rated capacity of 4.0 MGD, and is located south of Stirling Road, at the end of N.W. 76th Avenue. There are two 2.0 million gallon finished water storage tanks, and one 142,000 gallon clearwell located on the property. The south plant is also supplied by four wells located on the property. The water is treated via lime softening, filtration, and disinfection.

The North Treatment Plant is nearing the end of its useful life, and is scheduled to be closed after a new reverse osmosis (RO) facility is completed. A 6.0 MGD new reverse osmosis water treatment plant to draw water from the Floridian Aquifer is scheduled to be developed in an area in the central portion of the Town in or near the South Florida Educational Center.

In addition, the Ferncrest Utilities provides service to an area approximately 800 acres in size, and with a 2007 projected population of 5,615. The plant utilizes four wells to draw potable water from the Biscayne Aquifer, and has a rated capacity of 2.0 MGD, and a maximum withdrawal allocation of 0.74 MGD.

Since the Sunrise Utilities services multiple jurisdictions, determining the amount of their total capacity which is available to the Town of Davie residents is more difficult. However, based upon the projected populations of the Town of Davie Utilities service area and the Ferncrest Utilities service area, a calculation can produce estimates of the projected populations for the Town of Davie residents served by Sunrise. Specifically, by adding the service area populations of the Town of Davie Utilities and the Ferncrest Utilities, and then subtracting that figure from the total Town of Davie population

estimates for that year, an estimate for the portion of the Town of Davie population served by the City of Sunrise may be obtained. Then that estimate can be converted into a percentage of the total City of Sunrise service area population by dividing the Town of Davie population served by Sunrise by the total service area population of the City of Sunrise service area. This percentage can be used to calculate the amount of the City of Sunrise's capacity which is available to the Town of Davie residents by simply applying the percentage to the total capacity of the Sunrise Utilities. Based upon these calculations, it has been determined that there is approximately 8 MGD of Sunrise's total capacity which will be available to serve the Town of Davie residents throughout the planning period.

Potable Water Level of Service

The currently-adopted (prior to the EAR-based amendments) level of service (LOS) standard for potable water in the Town of Davie Comp Plan is 150 gallons per capita per day (gpcd). The Town has reviewed this level of service standard in light of recent conservation efforts and has determined that the Town's leak detection and water conservation programs have had the effect of reducing water consumption. Therefore, the Town will reduce its LOS for potable water at 145 gallons per capita per day.

Storage Capacity

As referenced above, the Town's water treatment plants include four finished water storage tanks, with a total capacity of 4.6 million gallons.

Existing Potable Water Demand

In 2005 there was a demand for approximately 4.63 MGD average daily flow from the Town of Davie's WTP. Given the Town of Davie's 2005 utilities service area population of 31,651, there was a 2005 per capita demand of 146.28 gallons per day. In addition, there was an average daily demand for 0.74 MGD for potable water from the Ferncrest Utilities plant. With a 2005 service area population of 5,372, the Ferncrest per capita demand equaled 137.75 gallons per day. Lastly, in 2005 the Town residents generated an average daily demand of 5.17 MGD for potable water from the City of Sunrise's Utility Department. With a 2005 service area population of 47,012, the Sunrise Service Area per capita demand equaled 110 gallons per day. In total, there was an average daily demand for potable water for the Town of 10.54 MGD.

Projected Potable Water Demand

As evidenced above, projecting potable water demand for the Town of Davie is more complicated than simply using the current usage rate and multiplying by projected population. This is because the potable water supply is provided by six separate utility providers: Town of Davie, City of Sunrise, Broward County, City of Hollywood, City of

Fort Lauderdale, and Ferncrest Utilities. As a result, all supply figures and data must incorporate the demands and capacities of all six utilities.

The Town intends to undertake an aggressive water use conservation program. The Town currently employs several water conserving methods, including distributing educational materials, requiring water-conserving devices for new construction and redevelopment, encouraging xeriscape landscape techniques and discouraging the use of potable water for irrigation. In order to further these goals, policies have been added to the Goals, Objectives and Policies of this Infrastructure Element to encourage the continued use of these water conservation measures, and to develop and implement new water conservation measures. These measures are expected to lead to the reduction of the per capita demand for potable water.

In order to assess whether the Town has adequate capacity to maintain its LOS, the Town will also assume that approximately 7% of the potable water produced by the different WTPs continues to be lost or unaccounted for, based upon figures from the Town's most recent Consumptive Use Permit (CUP). Thus, it is assumed that daily WTP production of potable water must be 7% more than the level required by the population multiplied by the per capita LOS standard. Table 2 below indicates the amount of projected water loss over the planning period, and the total potable water capacity needs based upon that loss ratio.

Table 1: Projected Potable Water Demand Through 2018

Year	Service Area Populations		Projected Billed Usage (MGD)		Total Usage (MGD)	Production Needed (MGD)
	Davie SA	Other Providers SA	Davie	Other Providers		
2008	31,366	61,703	4.55	7.68	12. 23	13.09
2009	31,965	62,438	4.57	7.77	12.34	13.22
2010	32,575	63,182	4.74	7.86	12.60	13.50
2011	33,198	63,935	5.19	7.96	13.15	14.09
2012	33,832	64,696	5.65	8.06	13.71	14.68
2013	34,478	65,613	6.10	8.17	14.27	15.28
2014	35,136	66,350	6.55	8.27	14.82	15.87
2015	36,631	67,117	7.00	8.37	15.37	16.46
2016	37,096	67,717	7.47	8.44	15.91	17.05
2017	37,567	68,325	7.95	8.52	16.47	17.64
2018	38,044	68,967	8.52	8.60	17.02	18.23

Note: Includes projections for the redevelopment of the TOC and RAC
Utilizes 2007 TAZ data for consistency and accuracy
Utilizes 145 LOS for the Town of Davie

Table 2: Water Loss Ratio and Total Capacity Needs

Year	Total Usage (MGD)	7% Loss Ratio (MGD)	Production Needed (MGD)
2008	12.23	0.87	13.09
2009	12.34	0.88	13.22
2010	12.60	0.90	13.50
2011	13.15	0.91	14.09
2012	13.71	0.92	14.68
2013	14.27	0.94	15.28
2014	14.82	0.95	15.87
2015	15.37	0.98	16.46
2016	15.91	0.99	17.05
2017	16.47	1.00	17.64
2018	17.02	1.01	18.23

Source: Town of Davie Utilities, Iler Planning Group

As noted earlier, currently the Town, in combination with the other utility providers serving the Town, conservatively has the capacity to produce 14.66 MGD, which is sufficient to serve the Town's projected population through the end of the planning period without water loss. Given a water loss ratio of 7%, that capacity is only sufficient for the potable water needs through 2014. However, the north treatment plant is to be retired (reducing capacity by 2.63 MGD), and a new 6 MGD reverse osmosis treatment plant is to be constructed to take its place. The retirement of the old plant and the development of the new plant will result in a net increase of 4 MGD. Thus, the future

capacity of the Town's water supply system will be 12.5 MGD, which is well in excess of the amount needed to serve the Town's projected population through the new long range planning horizon of 2018.

Alternative Water Supply Plan (AWSP)

The Town has developed an Alternative Water Supply Plan (AWSP) based upon the development of a new reverse osmosis (RO) water treatment plant, and associated facilities. The new plant will expand the potable water system by maintaining some of the existing Biscayne Aquifer water supply sources, and adding capacity from the alternative resource of the Floridian Aquifer. In total, the existing potable water supply capacity is planned to increase by approximately 4 MGD by 2012. The entire program through 2018 is planned to result in an approximately 12.5 MGD combined capacity system at a cost of approximately $32.52 million.

The new RO plant will draw water from the Floridian Aquifer. The Town will seek grants and appropriations from the State and Federal governments, as well as from the South Florida Water Management District (SFWMD) for the development of this alternative water source. In addition, there are several other capital improvements related to potable water planned, which are described in the Schedule of Capital Improvements (SCI). The proposed improvements will bring the system's total capacity to approximately 12.5 MGD. When combined with the water supply capacity of the other utility providers, there is a total system capacity of approximately 18 MGD. With the addition of the 6 MGD reverse osmosis treatment plant, approximately 33% of the Town's water will be supplied by alternative sources. In addition, the City of Sunrise is planning on developing a 7 MGD reverse osmosis treatment plant to draw potable water from the Floridian Aquifer by 2009, and develop a 2 MGD reclaimed water system by 2016. Assuming the same percent of the City of Sunrise's alternative water sources would be utilized in Davie as are the traditional water sources, there would be an additional 2.25 MGD of alternative source water provided to Town residents. Thus, 46% of the Town's water would be supplied by alternative sources by the year 2016.

Based upon recent water usage rates and the above referenced modified population projections, the potable water demand at the end of the planning period will be 15.39 MGD. The capital improvements will continue to provide satisfactory LOS throughout the period.

The Town's AWSP program is based on three elements: 1) the existing Biscayne Aquifer supplies; 2) Floridan Aquifer supplies treated via reverse osmosis (because these supplies are brackish water prior to treatment); and 3) five additional water system interconnections (i.e. to the City of Sunrise system, Broward County, City of Hollywood, City of Fort Lauderdale and the Ferncrest Utilities system in the sub-region). The program includes interim water supply measures until the system is completed. Included in these interim measures are: amendment to the Land Development Code to require irrigation quality utilities within new developments (purple pipe) for non-potable purposes; a water conservation program; and water system replacements.

The proposed Schedule of Capital Improvements (SCI) included in the Capital Improvements Element (CIE) shows several capital projects to begin implementation of the AWSP.

Statute Updates

In order to ensure the maintenance of potable water concurrency and to ensure compliance with new requirements passed by the Legislature in 2005 as part of Senate Bill (SB) 360, and as recommended in the EAR, new policies will be added to the Goals, Objectives and Policies of the Capital Improvements, Infrastructure, and Intergovernmental Coordination Elements, regarding the development of alternative water supplies and a potable water concurrency requirement, as well as the incorporation of a 10 Year Water Supply Facilities Work Plan.

SANITARY SEWER

This section evaluates the sanitary sewer system serving the Town of Davie. Sanitary sewer facilities are defined as structures or systems designed for the collection, transmission, treatment, or disposal of sewage and may include trunk mains, interceptors, treatment facilities, and disposal systems.

Treatment Facilities and Capacity

The Town currently operates a one (1) million gallons per day (MGD) wastewater treatment plant, and two (2) 2.0 MGD treatment plants, with a total capacity of 5.0 MGD of average annual daily flow (AADF).

The effluent from the treatment facility is pumped through a 7 mile long force main to the City of Hollywood Wastewater Treatment Plant, which also receives effluent from Cooper City's wastewater treatment plant. These effluents are mixed in the combined effluent pipe at Davie's pump station before being sent to Hollywood's re-use system, or being discharged to the ocean via their ocean outfall.

The Town's adopted LOS is 110 gallons per capita per day (gpcd). Based upon the projected average daily flows for the years 2005-2020 provided in Table 2 below, the current capacity of 5 MGD will be exceeded by the year 2010. Therefore, the Town is currently expanding the wastewater treatment plant to increase its capacity by 2 MGD by 2009, and has provided $10,000,000 in funding in FY 2008. A new 6.0 MGD wastewater treatment unit is scheduled for construction in an area in the central portion of the town in or near the South Florida Educational Center. However, the initial phase of the wastewater treatment plant will add 4 MGD to this system's capacity. Thus, the Town will achieve a wastewater treatment capacity of 13 MGD upon completion of the new plant in 2013. The remaining 2 MGD capacity of the new plant will be completed in phase two. Based upon the projected average daily flows provided below, this capacity will be sufficient to meet demand throughout the planning period.

The service area of the Town of Davie's wastewater treatment facilities do not coincide with the Town limits. Instead, like the potable water service areas, Ferncrest Utilities, Broward County, City of Hollywood, City of Fort Lauderdale and the City of Sunrise provide wastewater treatment services to the portion of their service areas contained within the Town of Davie. Although it is important to note the design capacities and demand of the other utility providers, it is the responsibility of those providers to ensure they maintain an adequate level of service throughout their planning periods. Specifically, Ferncrest Utilities has a design capacity of 0.60 MGD, and the City of Sunrise Utilities has a total wastewater treatment plant design capacity of 25 MGD. While all of the Ferncrest service area is contained within the limits of the Town of Davie, only about 25% of the Sunrise Utilities service area is within Davie. Thus, only 25% of Sunrise's total design capacity for wastewater treatment, or 6.25 MGD, is available for the portion of the service area in Davie.

Geographic Service Area

The Town of Davie's sanitary sewer system includes a geographic service area that includes the majority of eastern Davie and the Seminole Tribe of Florida Hard Rock Hotel complex on the Reservation. Ferncrest Utilities provides sanitary sewer to a small portion of the Town in the northeast sector of the Town, between Davie Road and SR 7. Sanitary sewer is provided to the remainder of the Town (predominantly the western portions of the Town) by the Broward County, City of Hollywood, City of Fort Lauderdale and the City of Sunrise Utilities.

Current Facility Demand

Wastewater service demands are expected to continue to increase moderately over the next ten years, as projected below.

Sanitary Sewer Level-of-Service (LOS)

The Town's adopted LOS in the Comp Plan for sanitary sewer facilities is 110 gpcd. Although the Town's LOS and the City of Sunrise has an adopted LOS of 127 gpcd. Since Ferncrest Utilities is not a public entity, they are not required to have an adopted LOS. However, they do utilize a rate of 145 gpcd for consumptive use permitting purposes. Please note, though, that neither Ferncrest nor Sunrise Utilities are responsible for the provision of a satisfactory level of sanitary sewer service to their respective service areas. Therefore, the calculations below are based solely on the Town of Davie Utilities average flows and capacities.

Septic Tanks

Septic tanks serve as a form of sanitary sewer collection, treatment, and disposal for some single family residential land uses within the Town of Davie. The Town continues to pursue elimination of septic tanks through the ongoing funding of providing sewer

connections to those still on septic tank. The current capital projects program has identified a need for approximately $3,000,000 per year over the next five (5) years for the sewering of unsewered areas. These funds are to be provided through individual assessments.

Sanitary Sewer System Analysis

As noted above, treatment services for the Town's sanitary sewer system are provided by the Town of Davie's Utility Department, with ultimate discharge provided by the City of Hollywood. The Town's adopted LOS standard is 110 gpcd. Based upon the population projections for the Davie Utilities service area of 38,044, the Town will need to provide a total of 4.18 MGD capacity at the end of the planning period. The wastewater demand projections and capacity needs based upon the population projections are presented in Table 3.

Table 3. Town of Davie Wastewater Capacity & Demand, 2005 – 2018

Year	Average Daily Flow (MGD)	Capacity (MGD)	102% of Previous Year's ADF (MGD)
2005	3.93	5 MGD	4.01
2010	5.77	7 MGD	5.89
2015	8.12	11 MGD	8.28
2018	9.54	11 MGD	9.73

Source: Town of Davie Utilities Department, 2008

SOLID WASTE

This section addresses solid waste services for the Town of Davie.

Service Providers

Waste Management, Inc. provides removal of both trash and solid waste, under a franchise agreement, to residents and businesses within the Town. Under the auspices of the Interlocal Agreement for a Resource Recovery System, Waste Management hauls the Town's processable solid waste to the South Wheelabrator Plant for incineration, and the ash is then landfilled. Nonprocessable solid waste is hauled to the Broward Interim Contingency Landfill located in Fort Lauderdale. Recyclables are collected by Broward County Waste and Recycling Services, and hauled to the Materials Recovery Facility (MRF) located within Davie. The MRF was opened in 1993, and processes more than 450 tons of recyclables per day.

The Interlocal Agreement was entered into in 1991 with a 20 year term. Therefore, the agreement is set to expire in 2011. At that time the Town will have the option to either extend the agreement, enter into a new agreement, or develop their own solid waste disposal system.

Level of Service

The Town of Davie's adopted residential LOS standard for solid waste is 8.9 pounds per unit per day. According to Broward County Waste and Recycling Services, the Resource Recovery System has the capacity to process 1.6 million tons of solid waste per year, via the two waste-to-energy facilities (Wheelabrator North and Wheelabrator South). In addition, there is 4.5 million cubic yards of capacity at the Broward Interim Contingency (BIC) landfill which serves as the final disposal point for all non-processable (i.e. non-burnable) and non-recyclable solid waste. Waste Management, Inc. provides removal of both trash and solid waste, under a franchise agreement, to residents and businesses within the Town. Approximately 115,939 tons of trash and solid waste were collected in Davie in 2006-2007.

Existing and Projected Demand

The above referenced figure for tons of solid waste collected in Davie equates to 231,878,000.00 pounds (115,939 tons x 2,000 pounds/ton).

The following are the projected maximum amounts of residential refuse that would be collected in Davie according to the housing unit estimates and projections included in the FLUE DIA:

- 2008: 181 tons/day (66,065 tons/year)
- 2012: 191 tons/day (69,715 tons/year)
- 2017: 203 tons/day (73,942 tons/year)

The Town's processable solid waste is hauled to the South Wheelabrator Plant, where it is incinerated, and the ash is landfilled. Nonprocessable solid waste is hauled to the Broward Interim Contingency Landfill in Fort Lauderdale. According to the Broward County Waste and Recycling Services, the Resource Recovery System has the capacity to process 1.6 million tons of solid waste per year. This is in addition to the 1.4 million tons per year capacity of the existing landfills. In addition, the two Wheelabrator Plants are expandable by up to thirty-three percent (33%). As the most current county-wide demand figures indicate there is an annual demand of 1.2 million tons per year, it is evident that less than half of the total annual capacity for solid waste is being utilized. Therefore, the County's total capacity under the current system is equal to at least 20 more years. Thus, the County has capacity to carry it through 2028. The Town's new long range planning timeframe is 2018. Thus there are no LOS problems related to solid waste.

DRAINAGE & GROUNDWATER RECHARGE AREAS

Drainage

Drainage facilities are defined in Rule 9J-5.003, F.A.C., as "a system of man-made structures designed to collect, convey, hold, divert, or discharge stormwater, and includes stormwater sewers, detention structures, and retention structures."

The Town of Davie is divided essentially into two basins at SW 100 Avenue. The west basin is controlled by a SFWMD pump station (S-9) located approximately at US 27 and Griffin Road. The eastern basin is controlled by a pump station (S-13) on the C-11 canal. The 100th Avenue divide is an equalizer known as S-13A. This structure can be opened to control local storms or equalize water levels in the east and west basins.

The Central Broward Water Control District, South Florida Water Management district, the Broward County Environmental Protection Department (BCEPD) Water Management Division, and the Tyndall Hammock Drainage District all govern land use with regard to land development of drainage features and groundwater recharge areas.

Drainage System Geographic Service Area

The primary drainage features in the Town are the North New River canal and the South New River canal (C-11 canal) and their tributary canals, man made facilities constructed originally to drain the Everglades. The Town's service area coincides with the Town limits.

According to the South Florida Water Management District (SFWMD), all of Broward County is considered a natural groundwater aquifer recharge area for the Biscayne Aquifer, currently the Town's sole source of water supply. However, the Town recently approved a Capital Improvement Program for the Fiscal Years 2008 through 2012 which included budgeting for a new water treatment plant, which will draw water from the brackish waters of the Floridian Aquifer, and treat the water with a reverse osmosis membrane treatment system.

Level-of-Service Standards

The following represents the Town's adopted LOS standard for its stormwater management system:

1. Federal Emergency Management Administration (F.E.M.A.) criteria for minimum floor elevations of building sites within the flood hazard area, and floodplain protection provisions.
2. Maximum allowable discharges of 3/4" per acre per day for properties west of 100th Avenue and 1 1/2" per acre per day for properties east of 100th Avenue.

Evaluation of Conditions and Drainage System

The Town's drainage system requires constant maintenance of debris and silt management and aquatic weed control. The Tyndall Hammock Drainage District and the Central Broward Water Control District are currently performing these tasks. Water quality regulation is by BCEPD. The Town and the Drainage Districts have adopted the dictates of the county standards and maintain compliance therewith. On site detention

improvements necessary to accommodate development are identified and required in conjunction with plat, site plan and/or building permit review.

Capital Improvements

To address drainage situations throughout the Town, the Five Year Capital Projects Program for 2008-2012, includes several drainage system improvements. Typically these programmed improvements are linked to Town roadway improvements, and consist of the addition of new drainage facilities on existing roadways throughout the Town.

Beyond the five-year timeframe, the Town will require developments to install adequate systems to maintain the LOS for stormwater drainage. Also, the Town is developing a program to reuse stormwater for non-potable water purposes, such as irrigation. This is a component of the Town's Alternative Water Supply Program (AWSP) and its efforts at water conservation.

Natural Groundwater Aquifer Recharge Areas

The management of surface water and groundwater resources is an important issue to the long-term environmental quality of the Town of Davie. It is generally recognized that many water management issues are addressed and regulated by either regional water management districts or other state and federal agencies. However, land use decisions made by the local government have the potential to impact natural resources, both positively and negatively, as vacant land is developed and the impacts to the environment are mitigated. As such, the Town of Davie should regulate new development within its borders in conformance with best management practices that conserve natural groundwater aquifer recharge areas.

Identification of Prime Recharge Areas

Although the South Florida Water Management District (SFWMD) has not identified any areas within Broward County as groundwater recharge areas for the Biscayne Aquifer, all of Broward is considered a natural groundwater aquifer recharge area for the Biscayne Aquifer. A major source of recharge to the Biscayne Aquifer in the County is the Everglades Water Conservation Areas. The three Water Conservation Areas (2a, 2b, and 3a) total 790 square miles, and comprise approximately 2/3 of the County's total land area. Recharge occurs naturally as stormwater, which is stored and purified in the Conservation Areas, seeps into the aquifer. Other major sources of recharge include the system of canals in the developed areas of the County. The land surface itself is also a major source of aquifer recharge. Generally, soil conditions in the County are conducive to recharge of the Aquifer. With the exception of those areas in southwest Broward with thick muck soils, movement of water into the ground is rapid. Recharge also may be obtained through injection and spray irrigation.

Major Natural Drainage Features

Major natural drainage features are typically defined as those that occur naturally in areas that accommodate the flow of stormwater, including streams, rivers, lakes, and wetlands. However, there are few lands within the Town that are considered wetland areas, according to the National Wetlands Inventory (NWI) conducted by the United States Fish and Wildlife Service. (See Appendix C -Existing Wetlands map)

Existing Natural Drainage and Recharge Area Regulations and Programs.

Additional federal, state, county, and local regulations or programs impacting development and/or resource conservation within the Town of Davie are discussed in the following sections.

Federal Regulations

Section 208 of the Federal Water Pollution Control Act (PL92-500, 1972) serves as the directing federal law with respect to water pollution abatement. In implementing the Act, the United States Environmental Protection Agency (EPA) identified pollutants carried in stormwater runoff as a major source of water contamination. To achieve the pollution abatement goals of the Act, the EPA provided assistance to state and local governments for developing Area Wide Water Quality Management Plans, or "208 Plans" as they are commonly known. These 208 Plans study a broad range of potential water pollution sources, including stormwater, and focus on identifying pollutant sources and abatement needs as well as development of regulatory programs to ensure implementation.

State Regulations

The FDEP has adopted a Stormwater Rule (Chapter 62-25, Florida Administrative Code (F.A.C.)) to fulfill part of the state's responsibilities under Section 208 of the Federal Water Pollution Control Act. The objective of the rule is to achieve 80 to 95 percent removal of stormwater pollutants before discharging it to receiving waters. Implementation of the stormwater rule is achieved through the permitting process. FDEP has delegated permitting responsibility to SFWMD and Broward County DEP. This rule requires treatment of the first one inch of runoff for sites less than 100 acres in size and the first 0.5 inch of runoff for sites over 100 acres in size. Treatment is generally accomplished through retention or detention with filtration. Retention requires the diversion of the required volume of runoff to an impoundment area with no subsequent direct discharge to surface waters. Pollutants are removed by settling and by percolation of stormwater through soil. Detention facilities are typically within the line of flow for the drainage system. Stormwater from a site passes through the detention facility and is filtered to remove pollutants prior to discharge to a surface water body.

County Regulations

Broward County has an adopted 208 Plan that is administered by BCEPD. Implementation of the plan is accomplished through the county's stormwater management permitting process.